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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,086

12/23/2005

Reiner Buettner

4197-125

4140

23448

7590

09/14/2010

INTELLECTUAL PROPERTY / TECHNOLOGY LAW

PO BOX 14329

RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

CALANDRA, ANTHONY J

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

09/14/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,086	<b>Applicant(s)</b> BUETTNER ET AL.	
	<b>Examiner</b> ANTHONY J. CALANDRA	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

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***Detailed Office Action***

The communication dated 6/28/2010 has been entered and fully considered.

Claims 1 and 3-23 are currently pending.

***Response to Arguments***

*Art rejections*

*The examiner withdraws the 102/103 rejections based on CHANG alone for claims 7, 8, 12, 13, 16, and 17 see explanation below.*

*Applicant argues that the anticipation rejection should be withdrawn because the claim fails to teach each and every element of the claim [applicant's argument's pg. 6 paragraph 4]. The applicant also argues that the release is controllable [applicant's arguments pg. 6 paragraph 5]. Applicant argues that the claimed instant cellulosic form has 'weakly crosslinked polyacrylates are incorporated into the fibers' [applicant's arguments pg. 7 paragraph 1] allowing the cellulosic form to be loaded with ions or other active agents and will retain its shape. The applicant argues that the cellulosic form will not disperse after initial use.*

The applicant's arguments are not well taken. The limitation that the agent release is controllable while found in the specification is not commensurate with the claim language. The limitation of the cellulosic form not dispersing after initial use is not commensurate with the claim language.

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***The applicant argues that in contrast the CHANG reference is disperses in water and this will cause corresponding release of any agent in a single burst resulting in a solubilized polymer binder formulation and separated fabric.***

The dispersion that CHANG is discussing is the ability of the paper fibers to separate from each other after use under agitation or flushing [0029 and 0045] and then moving through a sewer [0087]. CHANG actually teaches a cellulosic form which is wet which directly contradicts the applicant's argument. CHANG teaches wet wipes [0073] and says they maintain strength in aqueous solutions. These wipes which even though wet have enough strength for use. They are not dispersed until agitated. Since the product of CHANG does not disperse until agitated, it does not solubilize upon contact with water and instantly release any agents in a single burst as argued by the applicant.

***The applicant argues that CHANG fails to disclose that cellulosic structure is weakly crosslinked by a multifunctional crosslinker incorporated therein and that the multifunctional crosslinker is incorporated within the spun fibers.***

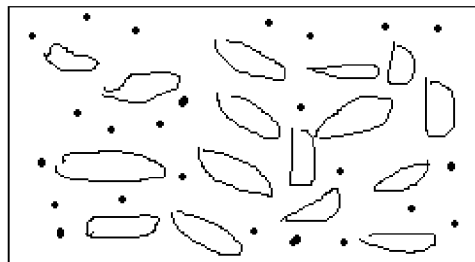
The examiner reads instant claim 1 as requiring the weakly linked polyacrylate to be incorporated the cellulosic which can be the finished product material while the applicant reads instant claim 1 to require the weakly linked polyacrylate to be within the spun fibers.

The examiner believes that the first interpretation is correct based on the claim language of instant claim 8 which states that the functional form is a fiber which has been loaded with active agents, blended with textile fibers and processed within a fabric. Therefore the cellulosic form can be a final fabric and not necessarily the wet spun fibers.

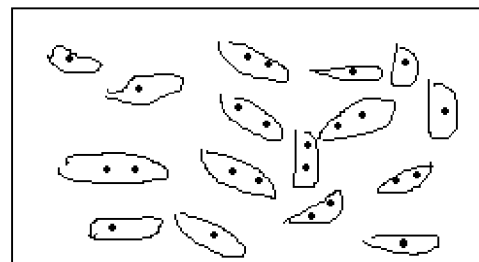
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CHANG discloses polyacrylate polymers can have the binder solution applied thereto and that the polyacrylate polymers are incorporated into the cellulosic structure [0076] and that the binder is applied to the superabsorbents. Since the form can be the final product CHANG meets the claim limitations.

**Polyacrylate incorporatated into substrate [CHANG 0076]**



**Incorporated into substrate  
by surrounding fibers**



**Incorporated in substrate by being  
placed inside fibers**

While CHANG teaches incorporating polyacrylate within the substrate, CHANG does not explicitly state that the polyacrylate is incorporated into the fibers within the substrate (see second figure above).

Therefore the examiner withdraws the 102/103 rejections based on CHANG alone for claims 7, 8, 12, 13, 16, and 17. The examiner has withdrawn the rejections based on CHANG alone to these claims as they state that the fiber or extrusion itself is loaded (claim 7, 8, 23), or that the form is the fiber (claims 12 and 13), or the method explicitly requires the polyacrylate to be within the fibers formed (claim 17). The examiner did not withdraw the rejections for claims 14-15 because the form only *comprises* lyocell. Fibers mixed with lyocell forming paper or a

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fabric can comprise lyocell. Therefore claims 14-15 do not require the polyacrylate to be absorbed in the fibers.

*The applicant argues that the crosslinking of CHANG referred to by the examiner is performed by a treatment of the substrates with a triggerable, water dispersible cationic polymer binder. Thus the applicant contends that such crosslinking is not a result of incorporated elements.*

CHANG does teach treating the substrate with the binder solution but also teaches treating the polyacrylate particles with the binder and then *incorporating* in the fibrous substrate [0076]. As per above the examiner has interpreted cellulosic form to be reasonably include the final product in addition to the fibers.

*CHANG in view of BUETTNER*

Making a clarifying amendment that the polyacrylate is incorporated within the fiber itself would eliminate CHANG as a reference by itself in addition to the claims rejections already withdrawn. However, the rejection based upon CHANG in view of BUETTNER would be maintained.

BUETTNER explicitly teaches that lyocell is formed with methylmorpholine-N-oxide monohydrate [paragraph 1 and 2] and suggests that polyacrylate can be mixed in while forming [paragraph 11-13] the extruded fibers. Therefore by incorporating the weakly linked polyacrylate of CHANG in the method of BUETTNER the limitations requiring the fibers to be loaded would be met, further the method steps of claim 17 would be met.

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***The applicant argues that BUETTNER teaches highly crosslinked fibers while the claims require weakly cross-linked polyacrylate.***

BUETTNER is presented to modify the CHANG reference. CHANG fails to explicitly disclose how the lyocell fiber is made (the examiner has argued that the process is implicit in the term lyocell and provided evidence thereof) or how crosslinked polyacrylate is incorporated within the substrate [0076]. BUETTNER discloses both how to make lyocell and a method known for incorporating polyacrylate into the lyocell fiber substrate. BUETTNER is not combined with CHANG for highly-crosslinked polyacrylate only the method of making lyocell and the method of incorporating polyacrylate within a fiber substrate. The person of ordinary skill in the art would not change the crosslinking amount as CHANG states for its purposes low crosslinking is important.

**The applicant argues unexpected results of weakly crosslinking increasing silver ion bonding capability.**

As discussed in the applicant's specification it appears known in the art that weak cross-linking increases ion binding ability [pg. 4 paragraph 1]. The applicant must show that the unexpected results form a nexus between the limitations which were found to be obvious. Arguing that there is a high increase in silver loading capability does not form a nexus between the features the examiner has argued obvious. Silver loading capability is a property obtained by weakly crosslinking which CHANG teaches alone. The applicant has not show that the unexpected result of high silver loading forms a nexus with the limitations of loading the polyacrylate into the fibers and not just polyacrylate surrounding the fibers.

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later



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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1, 3-6, 9-11, 15 and 18-22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Publication 2003/0055146 CHANG et al., hereinafter CHANG as evidenced by LYOCCELL FIBER and U.S. Publication 2003/0159620 KOSAN et al., hereinafter KOSAN.

As for claims 1, 10, 21 and 22 CHANG discloses a cationic polymer solutions [0009, abstract] that may be crosslinked [0055] which can be mixed in with cellulose fibers including lyocell [0074-0075] to form a cellulosic form such as a wet-laid fabric [abstract] The form may contain antimicrobials such as silver salts [0103]. CHANG discloses that the form may contain lyocell [0075]. CHANG further discloses that the formulation can be applied to the substrate before drying [0171] and then removing the water of the solution. CHANG discloses that the fiber can be a solvent spun lyocell [0175].

CHANG discloses that the fibers may be dried to control the curing to provide a degree of bonding without significant cross-linking [0064]. The examiner has interpreted without a significant degree of cross-linking to mean 'weakly cross-linked'. Additionally CHANG states that the crosslinking must remain sufficiently low that the dispersibility of the article is not affected [0055]. CHANG teaches 0% cross-linkers [0054] which teaches towards the low instant claimed range. Upon further review of the prior art document, CHANG also suggests that when co-binders are used that the co-binder percentage should be less than 10% which overlaps with the instant claimed range and 1 to 20% which also overlaps with sufficient specificity with the instant claimed range [0055]. In the alternative as CHANG discloses the preference of low

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cross-linking and bonding without significant cross-linking, it would have been obvious to the person of ordinary skill in the art to optimize the amount of cross-linking in the product through routine experimentation. CHANG recognizes the importance of low amounts of cross-linking and recognizes that cross-linking is a result effective variable. CHANG teaches the crosslinker N-methylol-acrylamide [0055] which has multiple functional groups [0055].

The examiner notes specifically for the product claims that the product of CHANG appears to have substantially the same structural features including being a form (as i.e. a fabric), weakly cross-linked polyacrylate, and bactericidal ions including zinc and silver. When a prior art product is shown to have similar structural properties the burden shifts to the applicant to show a non-obvious difference caused by the process steps in a product-by-process claim [see e.g. MPEP 2113]. KOSAN gives evidence that the lyocell spinning process is considered a wet-dry extrusion process [0045]. LYOCCELL FIBER gives further evidence of how lyocell is formed and states lyocell is formed by an organic solvent (wet) spun and extruded. The fiber necessarily dries as the solvent is removed, and hence a wet-dry extrusion process.

As for claims 3 and 11, CHANG discloses silver loaded zeolite [0108] and discloses silver salts [0103].

As for claims 4 and 18, CHANG discloses both zinc and mercury ions [0103].

As for claims 5 and 19, CHANG discloses benzoic acid [0124].

As for claims 6 and 20, CHANG discloses between 0.01-1.0% additives [0124] which is equivalent to 0.1 to 20 kg per kg of cellulose which falls within the instant claimed range.

As for claim 9, CHANG discloses that polyacrylate can be present [0076].

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As for claim 15, CHANG discloses that polyacrylate can be present [0076] and discloses silver loaded zeolite [0108].

2. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication 2003/0055146 CHANG et al., hereinafter CHANG in view of U.S. Patent 5,853,867 HARADA.

CHANG suggests weakly cross-linking the polymers and suggests that the cross-linking co-binders should be present from less than 10% and between 1 to 20% [0055]. The examiner has stated above that 1 to 20% overlaps with sufficient specificity to the instant claim or alternatively, that it would be obvious to optimize the amount of cross-linking. Further, in the alternative, HARADA discloses the cross-linking agent being present from 0.01- 2% by weight [column 5 lines 58-60]. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the cross-linking concentration of HARADA as a starting point for the cross-linking concentration optimization of CHANG. The person of ordinary skill in the art would be motivated to do so to obtain absorbents with excellent water retaining power [abstract]. Absorbency is an important feature of CHANG for such products as diapers.

3. Claims 1 and 3-23 are rejected under 35 U.S.C. 103(a) as obvious over U.S. Publication 2003/0055146 CHANG et al., hereinafter CHANG, in view of WO00/63470 BUETTNER et al., hereinafter BUETTNER.

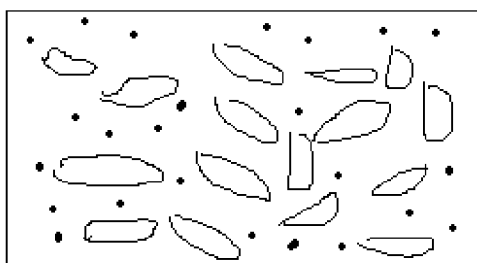
The examiner has included the machine generated English translation of the WIPO document.

As for claims, 1 and 3-23, the examiner has argued that the spinning process of CHANG is a dry/wet extrusion process and given evidentiary support. In the alternate, CHANG teaches all of the features as per above. CHANG discloses a process for making a cellulosic lyocell form

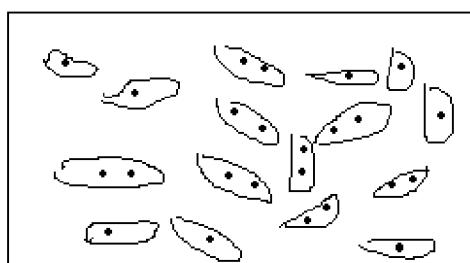
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with superabsorbent polyacrylate [0075-0076 and 0080] including lyocell. CHANG does teach treating the substrate with the binder solution but also teaches treating the polyacrylate particles with the binder and then incorporating in the fibrous substrate [0076]. CHANG does not teach how to incorporate the polyacrylate into the fibrous structure. Incorporation into the substrate as discussed by CHANG can be one of two ways, polyacrylates mixed with the fibers or polyacrylates inside the fibers.

**Polyacrylate incorporated into substrate [CHANG 0076]**



**Incorporated into substrate  
by surrounding fibers**



**Incorporated in substrate by being  
placed inside fibers**

BUETTNER suggests that lyocell can be formed via a dry-wet extrusion process [abstract] to form highly absorbent forms [abstract]. At the time of the invention the person of ordinary skill in the art would look to BUETTNER for methods of forming lyocell fibers. Both BUETTNER and CHANG are related to highly absorbent forms and both teach lyocell. It is typically *prima facie* obvious to use known techniques to improve similar methods in the same way. The person of ordinary skill in the art would look to BUETTNER for methods of forming the lyocell which allow for the formation of highly absorbent structures and methods by which

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polyacrylate can be incorporated into substrates. BUETTNER teaches that lyocell is formed with methylmorpholine-N-oxide monohydrate [paragraph 1 and 2] and suggests that polyacrylate can be mixed in while forming [paragraph 11-13] the extruded fibers. BUETTNER suggests that this method allows for the precipitation of the finely divided particles of polymer [paragraph 12]. Finely divided particles have more surface area and therefore are more absorptive. As such the person of ordinary skill in the art would look to BUETTNER to obtain finely divided particles which increase absorption. BUETTNER gives further motivation for this using method in the process of CHANG by stating that it obtains excellent absorptive capabilities and speed of absorption [abstract]. Increased absorption is an important property for the class of products disclosed by CHANG including diapers.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571) 270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Daniels can be reached on (571) 272-2450. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anthony J Calandra/  
Examiner, Art Unit 1791

/Matthew J. Daniels/  
Supervisory Patent Examiner, Art Unit 1791